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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/985,707	11/06/2001	Tadahiro Ohmi	35.C13974 D1	4300

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EXAMINER	
MONBLEAU, DAVIENNE N	

ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 09/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/985,707	OHMI ET AL.	
	Examiner	Art Unit	
	Davienne Monbleau	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *41,42 and 45-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *41,42 and 45-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

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Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *09/425,015* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krasnov (U.S. Patent No. 6,198,762) in view of Hagiwara (U.S. Patent No. 5,381,210) and Ohmi et al. (EP 0 820 132 A2). Krasnov discloses in Figure 1B a laser oscillating apparatus comprising a gas supply structure of a convergent-divergent nozzle type, wherein said gas supply structure comprises a fluid inlet (3a and 1a), a throat portion (1B) for controlling said compressible fluid to a speed less than a sound speed and a fluid outlet (3B and 1c). Krasnov does not teach an exposure apparatus. Hagiwara teaches in Figure 2 an exposure apparatus comprising laser exposure/illuminating light (IL), a first optical system (5) for radiating the illuminating light onto a reticle (2), and a second optical system (3) for radiating the illuminating light onto a surface to be irradiated (4). It would have been obvious to one of ordinary skill in the art to use the laser as a light source for the exposure apparatus taught by Hagiwara, since any suitable laser source may be used. Krasnov does not teach a waveguide unit for guiding microwave into said supply path structure. Ohmi et al. teach in Figure 8A a gas laser tube (2) and a slotted waveguide (1) for guiding microwave into the gas laser tube. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a microwave source to pump the laser gas in Krasnov,

as taught by Ohmi et al., to produce a high-power laser beam. Furthermore, using a plurality of slots creates a uniform distribution of the microwave pumping energy.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krasnov (U.S. Patent No. 6,198,762) in view of Hagiwara (U.S. Patent No. 5,381,210), Ando et al. (U.S. Patent No. 4,911,805) and Ohmi et al. (EP 0 820 132 A2). Regarding Claim 42, Krasnov teaches in Figure 1B a laser oscillating apparatus comprising a gas supply structure of a convergent-divergent nozzle type, wherein said gas supply structure comprises a fluid inlet (3a and 1a), a throat portion (1B) for controlling said compressible fluid to a speed greater than a sound speed and a fluid outlet (3B and 1c). Krasnov does not teach a plurality of path structures. Ando et al. teach in Figure 6D and in column 8 lines 48-60 that at least two path structures (plurality), of the convergent-divergent nozzle type with throat portions (2 and 2'). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a group of path structures connected in series in Krasnov, as taught by Ando et al., to further control and vary the flow velocity of the gas. Krasnov does not teach an exposure apparatus. Hagiwara teaches in Figure 2 an exposure apparatus comprising laser exposure/illuminating light (IL), a first optical system (5) for radiating the illuminating light onto a reticle (2), and a second optical system (3) for radiating the illuminating light onto a surface to be irradiated (4). It would have been obvious to one of ordinary skill in the art to use the laser as a light source for the exposure apparatus taught by Hagiwara, since any suitable laser source may be used. Krasnov does not teach a waveguide unit for guiding microwave into said supply path structure. Ohmi et al. teach in Figure 8A a gas laser tube (2) and a slotted waveguide (1) for guiding microwave into the gas laser tube. It would have been obvious to one of ordinary skill in the art at the time of the

invention to use a microwave source to pump the laser gas in Krasnov, as taught by Ohmi et al., to produce a high-power laser beam. Furthermore, using a plurality of slots creates a uniform distribution of the microwave pumping energy.

Claims 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagiwara (U.S. Patent No. 5,381,210) in view of Krasnov (U.S. Patent No. 6,198,762) and Ohmi et al. (EP 0 820 132 A2). Regarding Claim 45, Hagiwara teaches in column 1 lines 13-20 a method for producing a device comprising coating a wafer with a photosensitive layer to be irradiated and exposing said wafer to create a pattern and an exposure apparatus comprising laser exposure/illuminating light (IL), a first optical system (5) for radiating the illuminating light onto a reticle (2), and a second optical system (3) for radiating the illuminating light onto a surface to be irradiated (4). It is standard that the photosensitive layer will be developed after the irradiation. Hagiwara does not teach the gas supply path structure of the laser. Krasnov teaches in Figure 1B a laser oscillating apparatus comprising a gas supply structure of a convergent-divergent nozzle type, wherein said gas supply structure comprises a fluid inlet (3a and 1a), a throat portion (1B) for controlling said compressible fluid to a speed greater than a sound speed and a fluid outlet (3B and 1c). It would have been obvious to use the laser structure in Hagiwara, as taught by Krasnov, since any suitable laser source may be used. Krasnov does not teach a waveguide unit for guiding microwave into said supply path structure. Ohmi et al. teach in Figure 8A a gas laser tube (2) and a slotted waveguide (1) for guiding microwave into the gas laser tube. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a microwave source to pump the laser gas in Krasnov, as taught by Ohmi et al.,

to produce a high-power laser beam. Furthermore, using a plurality of slots creates a uniform distribution of the microwave pumping energy.

Regarding Claim 46, Hagiwara teaches in column 1 lines 13-20 that said a semiconductor element is formed on a wafer.

Claims 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagiwara (U.S. Patent No. 5,381,210) in view of Krasnov (U.S. Patent No. 6,198,762), Ando et al. (U.S. Patent No. 4,911,805), and Ohmi et al. (EP 0 820 132 A2). Regarding Claim 47, Hagiwara teaches in column 1 lines 13-20 a method for producing a device comprising coating a wafer with a photosensitive layer to be irradiated and exposing said wafer to create a pattern and an exposure apparatus comprising laser exposure/illuminating light (IL), a first optical system (5) for radiating the illuminating light onto a reticle (2), and a second optical system (3) for radiating the illuminating light onto a surface to be irradiated (4). It is standard that the photosensitive layer will be developed after the irradiation. Hagiwara does not teach the gas supply path structure of the laser. Krasnov teaches in Figure 1B a laser oscillating apparatus comprising a gas supply structure of a convergent-divergent nozzle type, wherein said gas supply structure comprises a fluid inlet (3a and 1a), a throat portion (1B) for controlling said compressible fluid to a speed greater than a sound speed and a fluid outlet (3B and 1c). It would have been obvious to use the laser structure in Hagiwara, as taught by Krasnov, since any suitable laser source may be used. Hagiwara in view of Krasnov does not teach a plurality of path structures. Ando et al. teach in Figure 6D and in column 8 lines 48-60 that at least two path structures (plurality), of the convergent-divergent nozzle type with throat portions (2 and 2'). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a group of path

structures connected in series in Krasnov, as taught by Ando et al., to further control and vary the flow velocity of the gas. Krasnov does not teach a waveguide unit for guiding microwave into said supply path structure. Ohmi et al. teach in Figure 8A a gas laser tube (2) and a slotted waveguide (1) for guiding microwave into the gas laser tube. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a microwave source to pump the laser gas in Krasnov, as taught by Ohmi et al., to produce a high-power laser beam. Furthermore, using a plurality of slots creates a uniform distribution of the microwave pumping energy.

Regarding Claim 48, Hagiwara teaches in column 1 lines 13-20 that said a semiconductor element is formed on a wafer.

Response to Arguments

Applicant's arguments with respect to claims 41, 42 and 45-47 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US 5,050,181 and US 5,698,036).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. The examiner can normally be reached on Mon-Fri 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Dwienne Monbleau

DNM
August 26, 2003

Paul Ip

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